Saskatchewan Agriculture and Food

FARM *FACTS*

Pasture and Forage for White-Tailed Deer

INTRODUCTION

White-tailed deer ranching in Saskatchewan was legalized in 1987. Many believe the industry is still in the early stages of development, with a large potential for continued growth. As the industry expands and matures, there is growing interest in forage selection and pasture management specific to white-tailed deer. This publication will discuss these topics, taking into account factors unique to this animal and industry.

Studies on wild populations show clearly that food supply has a significant affect on survival, reproduction, body size, and Boone & Crockett antler scores. Meeting the nutritional needs year round will enable females to consistently produce multiple fawns and allow bucks to grow antlers to their genetic potential.

BACKGROUND and HISTORY

White-tailed deer (*Odocoileus virginianus)* are native to both North and South America. Currently, there are 38 subspecies recognized across the two continents. The subspecies Dakota (*O. virginianus dacotenis)* occupies the Northern Great Plains including Western Canada, North and South Dakota, eastern Montana and Wyoming, and western Minnesota. The Dakota white-tail has the largest body and antler size of all the white-tailed subspecies, and is characterized by a long, thick gray or grayish-brown haircoat. The relatively large body size and long, thick haircoat enables the Dakota to endure severe winter weather.

Before European settlement, the majority of the white-tailed deer population in North America lived in the eastern forests. In the wild, they require a habitat with trees and shrubs for food and shelter. This area still supports large numbers today.

On the open prairie grasslands of the West, woody growth was kept in check by periodic fires and periodic intensive grazing by bison. White-tailed deer were either absent or rare on the plains. In this region the population was generally restricted to the scattered riparian bottomlands. Prior to 1890, hunting pressure and a series of severe winters caused the small population on the Canadian prairies to decline drastically.

Since European settlement, the prevention and restriction of burning on the prairies has allowed the spread of woody vegetation, creating ideal habitat for wild populations of white-tailed deer. Increased habitat combined with agricultural crops such as cereal grains and alfalfa support the white-tailed deer wild populations on the prairies today.

SEASONAL METABOLIC CYCLE and NUTRITION REQUIREMENT

Growth, appetite, and energy requirement of white-tailed deer change with season. Northern wild ruminants (bison, elk, caribou, white-tailed deer) prime themselves for rapid body growth in summer and fat deposits in autumn by increasing their metabolism. The metabolic rate in adult white-tailed deer is reported to be 50% higher in summer than in winter. This enables them to exploit the brief summer flush of growing vegetation by increasing their intake.

Pasture management is critical to ensure the animals have access to the proper quantity and quality of forage required during their high summer and autumn demands.

Fawns born in early June will continue to grow on adequate nutrition until 17 months of age, but the rate of growth varies significantly from summer to winter. In the first 3 months, weight increases average 4.8-7.2 kg/mo. Rate of gain peaks in September at 7.2 kg/mo., and then declines to a low of 0.2 kg/mo. in March. The following spring, rate of gain increases to a peak of 3.5-3.8 kg/mo. during July, August, and September. Feed dry matter intake in September at four months of age has been measured at 4.8% of body weight. This declines to a low of 2.2% body weight in March and increases to 2.8% body weight the following summer. The energy requirement of a fawn is 40% lower in the first winter compared to the following summer.

Fawns begin to graze and browse at two weeks of age. Weaning begins when the fawn is four weeks old, and is often completed when the fawn is ten weeks old. A fawn born in early June requires excellent quality feed from July to December for proper body growth and for adequate fat reserve buildup. Malnourished fawns will build fat reserves from October to early December at the expense of body growth. In Table 1, the estimated optimum requirements of weaned fawns from early September to the end of November are 18-20% protein and 68% TDN. If these levels are to be met on pasture, the plants need to be managed so they are kept young and growing through the later part of the season.

The body weight of adult white-tailed deer fluctuates seasonally with loss in winter and gain over summer and fall. Fall is particularly important for building fat reserves because as much as 25-30% of the winter energy requirement can be supplied by body fat stores. Energy requirements are kept low in winter by avoiding travel through deep snow and remaining bedded with little physical activity.

The summer and autumn diets of does have a large impact on fawning rates. Trials have shown fawning rates to almost triple when does were switched from low to high nutrition. Does on excellent nutrition in autumn generally have high productivity, even when malnourished in winter. Females entering winter in good condition are able to lose 10-15% body weight without compromising reproduction. Producers are encouraged to manage for this weight loss because overfat does will have problems giving birth.

Males will commonly lose up to 20% of their pre-rut body weight during the breeding season. No study was found to determine an allowable body weight loss during rut in order that antler growth is not reduced the following season. Studies have shown food restriction in winter alone has less effect on antler development than food restriction during antler growth. Male fawns that enter the winter in undernourished condition will produce smaller antlers as yearling bucks.

Feed intake of white-tailed deer gradually increases in the spring and decreases through the winter. The dry matter intake of adults is estimated to average 1.7% of body weight through the winter months. During the lowest point in February and March, intake may be less than 1.5% of body weight. In summer during peak lactation, intake for does is estimated at 3.3% body weight. The estimate for bucks in summer is 2.6% body weight.

Table 1. Estimated nutrient requirements of white-tailed deer (dry matter basis), assuming peak fawning June 1-7 and peak rut Nov. 10-17.

Class/Age	Protein %	TDN %	Calcium %	Phosphorus %
4-6 months (Sept-Nov)	18-20	68	0.60	0.30
7-11 months (Dec-Apr)	12-16	60-62	0.58	0.30
12-18 months (May-Nov)	12-14	63-65	0.50	0.30
Females				
Gestation (Jan-Apr 15)	12-14	57	0.50	0.40
Late Gestation (Apr 15-May)	14-16	59	0.50	0.40
Lactation (June-July 15)	14-16	64	0.70	0.40
Lactation (July 15-Aug)	12-14	61	0.60	0.40
Pre Rut (Sept-Oct)	10-12	61	0.50	0.40
Maintenance (Nov-Dec)	7-10	51	0.35	0.25
Males				
Maintenance (Jan-Mar)	7-10	51	0.35	0.25
Antler Growth (Apr-Aug)	16	55	1.40	0.70
Pre Rut & Rut (Sept-Dec)	12-14	60	0.50	0.40

***Sources – Murray S. Feist, 1998 and Larry W. Varner.**

The energy requirement of a doe can double from the low in winter to the high during peak lactation. The energy needed by a buck increases about 70% from late winter to fall.

The peak breeding period for western Canada is Nov 10-15. Peak time for fawning is June 1-5. Table 1 includes the estimated nutrient requirements for adults based on their yearly cycle. Forages are more likely to fall short of requirements later in the grazing season unless the plants are manipulated with cutting or grazing.

PHYSIOLOGY

Ruminant animals are grouped into three categories: (1) Grazers: roughage feeders that select mostly grasses and sedges; (2) Browsers: concentrate selectors that feed mostly on forbs and the leaves, twigs, and bark of trees and shrubs; (3) Mixed Feeders: intermediate feeder between grazer and browser, adapted to grazing grasses, forbs, and woody plants.

Bison and beef cattle are classified as grazers. Elk are considered mixed feeders, and white-tailed deer are browsers (concentrate selectors). In all seasons white-tailed deer select only the most nutritious, rapidly digestible plant species and plant parts rather than an average of all the forage available. Compared to grazers, browsers have a relatively small and simplified rumen which is not capable of digesting large quantities of feed high in cellulose. White-tailed deer eat more frequently, averaging 10-12 feeding bouts/day compared to beef cattle at 3-4 bouts/day. Browsers pass feed through the digestive tract more rapidly, and extract fewer nutrients from feed compared to mixed feeders and grazers.

White-tailed deer do not bloat on legume pastures. The reasons are not completely understood but this feature allows producers the luxury of grazing high levels of alfalfa without the risk of death loss.

DIET SELECTION

Numerous studies have examined the seasonal diets of wild populations. They report a wide variation, depending on food availability. Generally, a foraging trend is apparent under normal conditions of good habitat where all plant classes are available.

Grasses, sedges, and winter cereals are selected in early spring because they are the first vegetation to initiate new growth. Typically they will comprise 50-80% of the diet, especially during a peak phase early in the season when all other vegetation is still dormant. One author suggests there is no physiological reason white-tailed deer could not be true grazers year round, provided the grasses being grazed supplied adequate nutrition.

Grasses are grazed in early spring during vegetative growth. Smooth bromegrass (left). Crested wheatgrass (right).

In early summer, white-tailed deer switch the majority of their diet to the new growth of forbs and browse. These are commonly selected equally, but the variation can be high depending upon availability and preference. **When available, alfalfa is a highly preferred forb, and western snowberry (buckbrush) is a highly preferred browse.**

During fall, forbs tends to decrease in the diet because of their lack of quality and availability. However, where forbs are managed for fall regrowth, such as second cut alfalfa hayfields, their use may not decline. The use of browse tends to increase during the fall, making up 40-90% of the diet. Selection for grasses tends to show an increase, most often when fall rains enable a flush of growth before freeze-up. Grass has been reported as high as 50% of the diet in fall.

White-tailed deer switch to their winter diet when snow depth reaches about 3 inches. Generally, browse from trees and shrubs make up a large portion of their winter diet. The variations reported are considerable, depending on winter conditions, geographic location, and the food sources available. Preferred browse species in western Canada are western snowberry, aspen and prickly rose. Other browse selected are common chokecherry, saskatoon, dogwood, buffaloberry, and willow.

TREES AND SHRUBS: ARE THEY REQUIRED?

This is an often debated question, because wild populations are heavily dependent on woody growth for survival. White-tailed deer did not evolve on the open prairie. They need trees and shrubs to provide hiding cover, shelter from the weather (especially in the extreme cold of winter), and browse during deep winter snow.

Trees and shrubs are essential for wild populations, but may not be needed under ranch conditions.

Under ranch conditions, woody growth is no longer essential because predators are removed and artificial shelters can be constructed. Browse is not necessary if adequate feed is provided during the winter months. There are numerous examples where white-tailed deer are raised in "unnatural" open environments for research and ranch purposes. Young deer raised in captivity on formulated diets frequently prefer food items

different from those consumed readily by wild deer. Preferences may be transmitted from one generation to the next when a fawn imitates the food selection of the doe. The key factor is proper nutrition rather than the proper mix of grass, forbs, and browse.

A problem facing producers who fence shrub and tree areas is maintaining the woody growth. In many cases the areas fenced contain relatively small areas of bush, and the browse is soon stripped. Over time the woody growth is browsed too intensively to regenerate and the bush is eliminated.

Experienced producers usually prefer fewer trees for ease of sighting, herding, and maintaining regular human contact. For example, 5-10% bush cover in a 15 acre paddock is considered optimum.
If the goal is to sustain a natural bush habitat, it is estimated 0.5-1.0 acres of bush per adult is required during the grazing season in addition to the seeded forage acres recommended in Table 2. If browsing continues through the winter months, the acres of bush required will increase. Improved recommendations will develop as the industry gains experience and fenced paddocks that contain trees are monitored.

To create prime habitat, a manager could push over, cut, or burn a portion of the mature bush on a 15-20 year rotation. This rotation would keep portions of the treed area in a high state of plant and habitat diversity. For wild populations, this type of land management is ideal. Large hunt ranches in heavily treed areas could use this strategy to ensure an optimum mixture of bush cover and open grazing. For ranches raising fawns, this type of land management is unlikely due to the amount of land required, fence costs, and difficulty of locating and moving animals from paddocks with relatively high amounts of bush.

PASTURE MIXES

White-tailed deer are non-bloating concentrate selectors. With current knowledge, it is believed legumes can and should make up a high portion of their diet. Research has not discovered the levels of grass and legume that are optimum for animal health, Boone & Crocket scores, fawning rates and growth rates.

In pastures that contain 50% grass and 50% legume, the two species are not grazed equally. A majority of the legume will be grazed before grass plants are selected. In these situations, white-tailed deer could be held on the paddock and forced to graze the grass portion. However, this would likely compromise production, especially if the grass plants were not kept vegetative.

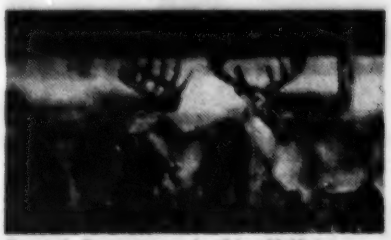
Some producers question whether seeded paddocks should include grass. No research was found to investigate whether pastures with 100% legume could be grazed season long without health or production problems. **The current recommendation is to aim for 80-90% legume and 10-20% grass in the forage stand. It needs to be emphasized this recommendation is a "best guess" and it may change as more knowledge is gained.**

When seeding paddocks, alfalfa is the highest producing legume in most cases. Meadow bromegrass is probably the best suited grass for white-tailed deer grazing. **The alfalfa/grass combination can be achieved by mixing the two across an entire paddock, or seeding the two on separate parcels inside a paddock.**

The current thinking by experienced producers is to seed the alfalfa and grass on separate parcels. For example, in a 5 acre paddock seed 4.5 acres to alfalfa and 0.5 acres to grass. In this situation the grass portion can be cut or mowed by itself if it begins to elongate and mature. Also, this avoids the problem of the grass increasing over the legume, especially when the legume is grazed more heavily.

A disadvantage of a pure legume stand is a lesser firm sod. During wet weather, muddy soil conditions have higher trampling loss and weeds have a greater opportunity to establish. One suggestion is to seed roadways and high traffic areas to grass, and the rest of the paddock to alfalfa.

If seeding a grass/alfalfa mixture, consider the following seeding rates. Alfalfa seeded at 1.0 lbs/ac gives a seeding rate of 4.5 seeds/sq. ft. Meadow bromegrass seeded at 1.0 lbs/ac gives a seeding rate of 1.8 seeds/sq. ft. A seed mix that contains 2.0 lbs alfalfa to 1.0 lb meadow bromegrass will have 83% alfalfa and 17% meadow bromegrass by seed count.



Smooth Bromegrass in this alfalfa/grass paddock is increasing over time because the alfalfa component is selectively grazed.

FORAGE SPECIES SELECTION

When choosing forages to seed, the following are important questions to consider:

1. Which species are palatable to white-tailed deer through the grazing season?
2. Which species meet the nutritional needs of white-tailed deer?
3. Which species produce the highest forage yield?

LEGUMES

Alfalfa is currently recommended as the first choice legume to seed. Many studies and observations confirm alfalfa is highly palatable to white-tailed deer when the plants are vegetative and/or actively growing. Provided

moisture is adequate, the plant has good regrowth potential. Separate paddocks can be cut or grazed at staggered times through the summer to keep plants vegetative and palatable during summer and fall.

Alfalfa is capable of supplying the high protein requirements of white-tailed deer through the summer. When properly inoculated, legumes obtain a portion of their nitrogen requirement from atmospheric nitrogen fixed by bacteria in nodules associated with their roots. This free source of nitrogen fertilizer enables a legume to produce a high protein forage. Alfalfa and other legumes are high in calcium, similar to the levels found in browse. The calcium requirements of white-tailed deer are highest in spring and summer due to rapid growth by fawns, lactation by does, and antler formation by bucks.

Alfalfa has a proven record for high production and persistence across all of the soil zones. The creeping rooted varieties are more tolerant to grazing.

Cicer Milkvetch (CM) palatability to white-tailed deer is unknown. CM is slow to begin growth in spring, but its growth continues well into fall.

It retains green leaves late into the season for good quality fall grazing. Studies show mature stands of CM have significantly higher protein and energy than mature stands of alfalfa.

Yields of CM can vary considerably compared to alfalfa, but typically it yields 20% less than alfalfa. CM does not produce as well when managed with multiple clippings in a season. This would be the case if it were grazed continuous and season-long. It can equal alfalfa production when stockpiled and cut or grazed once in fall. In some cases it has outyielded alfalfa because of its resistance to pocket gophers. This could be an important feature for ranches located on sandy soils where pocket gopher activity is higher. CM is recommended in the Moist Dark Brown, Black, and Grey Wooded soil zones. New varieties that are high yielding and easy to establish are scheduled to be released in 2000.

Sainfoin is the preferred legume of elk in all seasons, so it would likely be grazed by white-tailed deer. Sainfoin is promoted in the beef cattle industry as a non-bloating legume, but this is not a concern for white-tailed deer producers.

Sainfoin yields 80-85% of alfalfa over the long term. It has a big seed and is easy to establish. In some cases it has outyielded alfalfa in the first two years because of the quick establishment. It is drought tolerant and is recommended in the Brown, Dark Brown, and Black soil zones.

Alsike Clover (AC) palatability to white-tailed deer has not been confirmed. It is likely AC would be grazed because Elk will readily graze it along side of alfalfa.

AC tolerates up to six weeks of spring flooding. It may be seeded in potholes where alfalfa will drown. AC is recommended in the Grey Wooded soil zone because it needs high moisture to survive and produce good yields. In all other soil zones, it is limited to lower flooding areas because it will most often not survive on drier sites with competition from other forages. AC is a short-lived perennial plant, but once established remains in the stand by reseeding itself.

Grasses

In wild populations of white-tailed deer, grasses are selected most often in spring. Grasses are important for high quality early season nutrition because they are the first plants to start growth in spring. On a ranch, early growth may be less important because the early spring nutritional needs can be supplied with hay or concentrates.

There is little information available on which grass species are best suited for white-tailed deer. It is assumed species that remain and/or can be managed to remain soft and vegetative for a greater part of the summer will be more suited for white-tailed deer.

Meadow bromegrass produces a leafy vegetative growth and is likely the best choice grass for white-tailed deer pastures. If moisture is available it regrows readily for summer and fall grazing. Meadow bromegrass does not aggressively spread, so it allows the legumes to remain in the stand.

Smooth bromegrass is relatively tall with coarse stems. This height can provide hiding cover and shelter for fawns, but the stems will not be grazed. Smooth bromegrass has a strong creeping root which forms a dense sod. The sod

Table 2. Acres per 150 lb doe (0.2AU) based on a six month grazing season without supplemental feed, 30% carryover, 85% creeping rooted alfalfa and 15% meadow bromegrass pasture in good condition.

Stand Age	Brown Soil Zone		Dark Brown, Black & Gray Soil Zone	
Years	Heavy & Medium Texture	Light texture	Heavy & Medium texture	Light texture
1-3	0.8	0.9	0.5	0.6
4-6	1.0	1.2	0.7	0.8
7+	1.5	1.7	1.0	1.2

***Sources – Tremblay, M and B. Kirychuk, 1998. Initial stocking rate recommendations for seeded forages in Saskatchewan.**

can be an advantage during wet conditions to support animal and machinery traffic, but it competes strongly with the legume species.

Orchard grass would likely be preferred by white-tailed deer because it is soft and leafy. Unfortunately this grass is prone to winterkill in much of western Canada so it is seldom recommended.

Crested wheatgrass provides the earliest spring grazing, but becomes stemmy and unpalatable in early summer if not grazed intensively. If early spring grazing is a priority, consider seeding a small portion of the paddock to crested wheatgrass rather than scattering it throughout the paddock.

STOCKING RATES

Table 2 lists the acres of seeded pasture required by a 150 lb doe based on a six month grazing season. The figures are calculated from the publication: *Initial stocking rate recommendations for seeded forages in Saskatchewan, Saskatchewan Agriculture and Food, 1998.* The estimates in the table are based on a pasture with 85% creeping rooted alfalfa and 15% meadow bromegrass in good condition. An allowance of 30% carryover is included to maintain the pasture in good condition. The calculations assume no supplemental feed provided during the grazing season.

When calculating stocking rates, the standard Animal Unit (AU) is the amount of forage utilized by a 1,000 lb beef cow. It is assumed a 150 lb doe in summer is equivalent to 0.2 AU. Stated another way, five does at 150 lbs are equivalent to a 1,000 lb beef cow.

The acres required in Table 2 will vary depending on rainfall variations, pasture condition, forage species, forage mix, and fertilizer rates. To calculate the acres required for conditions other than those in the above example, refer to the Initial Stocking Rate publication mentioned earlier or contact a Rangeland Agrologist.

PLANT GROWTH STAGE

The stage of plant growth can have a greater effect on nutrition and palatability than plant species or time of year. Table 3 compares typical nutrient contents of alfalfa and crested wheatgrass in two growth stages. When comparing plant species, alfalfa is normally considered a higher quality forage plant than crested wheatgrass. However, a mature stemmy plant of alfalfa at 6-7% protein and 45% TDN is lower quality than a growing, vegetative plant of crested wheatgrass at 12-14% protein and 52% TDN. When time of year is considered, the quality of crested wheatgrass in August will be poor if the plants are mature, whereas the quality of crested wheatgrass in August can be good if the plants are vegetative. **Feed quality increases when plant growth is immature and soil fertility is high.**

White-tailed deer select plant species and portions of a plant that supply higher nutrition than the average of the pasture. They are usually selecting for new vegetative growth, particularly as plants become more mature later in the growing season.

White-tailed deer have relatively high nutritional requirements. If a producer intends to supply their needs with grass and alfalfa pasture, separate paddocks need to be kept in a growing, vegetative state for as much of the season as possible. This is a challenge because Nature quickly advances vegetative plants in spring to their reproductive phase in early summer. Perennial forage paddocks need to be cut or grazed on a staggered date basis starting early in the season. This management strives to provide plants that are vegetative and actively growing during every month of the summer. Otherwise, if plant growth is allowed to continue unchecked, the majority of growth is condensed into May and June.

Controlling plant growth with grazing pressure is more difficult when pasturing a concentrate selector. In a properly managed grazing system where paddocks are given adequate time to rest and recover, plants will grow beyond the vegetative state. Grazers, such as bison or beef cows, can be held in a paddock and "forced" to clip stems and old growth without compromising production to the point of economic loss. White-tailed deer should not be forced to graze stems that are less palatable and nutritious. To avoid excessive old growth buildup, some producers cut or mow the stands. Others are including bison in the rotation to graze old growth.

A planned grazing system with multiple paddocks is difficult to justify for white-tailed deer because of high fence costs. An option is to have one or two relatively large paddocks where portions of the paddock are cut at different dates throughout the year. This strives to provide new growth on one area of the pasture throughout the summer. Recognize this is not optimum pasture management when animals have access to the entire pasture for all of the season.

Table 3. Typical nutrient content of alfalfa and crested wheatgrass in two growth stages.

Plant Species	Protein %	TDN %
Alfalfa		
- pre bud, 6-12" tall	20-30	62
- mature	6-7	45
Crested Wheatgrass		
- Vegative, 5" tall	12-14	52
- Mature	4-5	36

A portion of this alfalfa paddock has been mowed and baled in late June to provide new vegetative growth for July and August.

This option can be a compromise until more paddocks are built. When an entire paddock is kept vegetative all summer with grazing or mowing pressure, the plants will be overgrazed.

EXTENSIVE vs. INTENSIVE RANCHING – SPACE REQUIREMENTS

The initial thought of those considering to raise white-tailed deer is to mimic as much as possible the space and habitat found in the wild. It is natural to believe the animals require plenty of space, especially for does during the fawning season. Many believe confined conditions will cause social stress, leading to reduced productivity. However, even though not far removed from the wild, white-tailed deer can respond quite well to intensive rearing. The acres per animal that producers choose to provide may vary widely, depending upon the goals and beliefs of the producer.

Examples of space provided for white-tailed deer are discussed below. The minimum area a white-tailed deer population can tolerate is probably influenced by a large degree on past management and training of the group. Producers are encouraged to observe and monitor their animals for signs of stress.

In one study, a wild population of 23 white-tailed deer was fenced inside a wooded area of 630 acres and allowed to naturally increase over 5 years. During this time they were fed free choice year round. When the group size reached 159 (1 deer/4 acres) social stress was observed to cause reduced fawn survival. In this case the older does established a parturition territory which they aggressively defended. Some of the younger does that could not establish a territory were not able to raise their fawns. At the end of the study, the population in the compound was reduced to 44. The following year, fawn survival increased significantly.

There are examples of producers who fence one acre per adult doe. With natural service, breeding group size is limited to 15-25 does, so paddocks are about 20 acres. In an area this size, there is no apparent social stress during fawning or any other season. Ironically, some producers have had higher fawn survival when fawning a group of 15 does on a 5 acre paddock compared to a 20 acre paddock. In these situations, fawns were accidentally frightened by a person or vehicle and ran from their hiding spot. When a fawn changes hiding locations, it is believed they are easier for the doe to find in a smaller paddock.

As an example of confined rearing, one producer has fawned a group of 15 does on an area of 0.50 acres without any apparent social stress. In this drylot situation, all of the feed is supplied and the pens are sterilized with lime to control diseases and parasites. This level of confinement is discouraged because it is not the image the industry wants to portray. The public perception is white-tailed deer are still wild, even though they are fenced. People prefer to see them raised in a more natural setting where ample vegetation is available for grazing and hiding cover.

PASTURE and FEED ECONOMICS

In the beef cattle industry, the yearly cost of feed is a significant expense. Forage management is encouraged because healthy plants are capable of producing to their potential. Pastures and hayfields in good condition can support more animals which reduces grazing and feeding costs. Producers tend to manage for a long grazing season because the costs of grazing are generally considered about half the cost of feeding.

With the current economics in the white-tailed deer industry, one can argue that good pasture management is not essential for profits. When pastures are overgrazed, forage production is reduced and supplemental feed is required for a greater part of the season. When pastures are undergrazed, plants grow beyond the vegetative state and quickly lose quality. In this case, even though ample quantity is available, concentrates need to be provided to meet the nutritional requirements. **The extra costs of supplemental feed and concentrates are somewhat insignificant compared to other industry inputs.** Of greater importance is adequate nutrition to ensure production is not compromised.

The main constraints for optimum pasture management today are the high cost of fence and the relatively low number of animals per ranch. It is cheaper to buy feed and supplements rather than build and divide pastures.

On ranches where grazing alone is expected to meet the nutritional needs of the animals from early spring to late fall, attention to pasture management is essential. Pastures will be viewed as a cheap source of forage from early spring until late fall as the industry grows and matures. Producers will be able to take advantage of the white-tailed deer's ability to grow and deposit fat economically on pasture, and "idle" at little expense through the winter on lower quality feed and fat reserves.

NATIVE RANGELAND vs. SEEDED FORAGES

The type of forage growing on a white-tailed deer ranch will affect the level of supplemental feed required. White-tailed deer evolved as a concentrate selector, so their nutritional needs are relatively high, especially in summer.

Native rangelands in the Brown and Dark Brown soil zones are not well suited for white-tailed deer grazing, unless there is a sufficient amount of woody growth that can be maintained for browsing. On open, non-treed areas in these soil zones, native pastures contain 90-98% grasses and sedges. It has been argued there is no physiological reason white-tailed deer cannot be grass eaters year round provided the grass quality is maintained at a high level. Although this may be true, the feed quality white-tailed deer require would be difficult to meet with grasses only. Ranches located in these zones on native prairie will likely need to provide supplemental feed for most of the summer.

Native rangelands in the Black soil zone often have abundant trees and shrubs, making pastures in this area better suited to the browsing habits of white-tailed deer. The aspen parkland is considered prime habitat for wild populations of white-tailed deer. The challenge when fencing an area with natural bush is to maintain the understory in a healthy state of regeneration. It is estimated an adult white-tailed deer requires one acre of trees and shrubs along with forage grazing area to maintain the woody growth. Most producers do not wish to have this amount of bush in a pasture because it will be too difficult to manage and handle the animals. When all aspects of the industry are considered, seeded perennial forage pasture is the most suitable landbase on which to raise white-tailed deer.

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Acknowledgments:

Originally prepared by: **Lorne Klein**, Rangeland agrologist, Grazing and Pasture Technology Program (GAPT), July 1999.

Thanks to the following individuals for providing information, proof reading, and offering suggestions to improve this booklet:

Zoheir Abouguendia, GAPT, Regina
Todd Jorgenson, GAPT, Lloydminster
Murray Feist, Saskatchewan Agriculture and Food, Saskatoon
Ray Nixdorf, Saskatchewan Agriculture and Food, Regina
Adam Schmidt, Saskatchewan Environment and Resource Management, Melville
Ron Friesen, White-tailed Deer Producer, Warman
Saskatchewan White-Tail and Mule Deer Producers Association

Saskatchewan Agriculture and Food

Printed November 2001
1M ISSN 0840-9447 0045